DOCUMENT RESUME

ED 146 569 CS 003 780

AUTHOR Downing, John
TITLE How English Spelling Codes Language.
PUB DATE May 77
NOTE 16p.; Paper presented at the Annual Meeting of the International Reading Association (22nd, Miami Beach, Florida, May 2-6, 1977)

EDRS PRICE MF-$0.83 HC-$1.67 Plus Postage.
DESCRIPTORS *Decoding (Reading); Diachronic Linguistics; Language Instruction; *Lexicology; *Morphology (Languages); *Phoneme Grapheme Correspondence; Phonemes; *Spelling; *Spelling Instruction; Syntax; Writing

ABSTRACT

This paper presents three viewpoints of the coding of language in English spelling: the classical view (that letters are a code for phonemes but that English spelling contains much irregularity), the revolutionary position (that letters do not code phonemes at all), and the eclectic view (that English spelling does code phonemes but that it also codes other aspects of language as well). It is concluded that, although the classical view has substantial validity, a full understanding of English orthography depends on the recognition that other, nonphonemic rules coexist with the phonemic ones. According to this argument, language instruction should reflect the eclectic view and should provide children with an understanding of the morphemic and syntactical codes that sometimes overrule the phonemic code. (RL)

****
* Documents acquired by ERIC include many informal unpublished *
* materials not available from other sources. ERIC makes every effort *
* to obtain the best copy available. Nevertheless, items of marginal *
* reproducibility are often encountered and this affects the quality *
* of the microfiche and hardcopy reproductions ERIC makes available *
* via the ERIC Document Reproduction Service (EDRS). EDRS is not *
* responsible for the quality of the original document. Reproductions *
* supplied by EDRS are the best that can be made from the original. *
****

ED146569

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

John Downing

University of Victoria, Canada

Mailing Address: Faculty of Education

P.O. Box 1700

Victoria, B.C., Canada

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

John Downing

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) AND THE ERIC SYSTEM CONTRACTORS."

"HOW ENGLISH SPELLING CODES LANGUAGE"

Paper presented at the Annual Convention of the International Reading Association, Miami Beach, Florida, May 2-6, 1977

CS003780

John Downing

University of Victoria

Victoria, Canada

How English Spelling Codes Language

In phonic methods of instruction students are taught the rules of the relations between letters and sounds. These sounds are what linguists refer to as "phonemes." When so-called "linguistic approaches to reading" were introduced in the 1960s, most linguists would probably have agreed that the letters in English spelling were a code for English phonemes. But in the past decade many linguists have revised their judgments of the coding principles in English spelling. If teachers want to teach their students how to decode printed words they must decide what is the code. Three alternative groups of linguistic theories are discernable at this present time: (1) the classical view that letters are a code for phonemes but English spelling contains much irregularity; (2) the revolutionary position that letters do not code phonemes at all; (3) the eclectic view that English spelling does code phonemes but it also codes other aspects of language as well.

The Classical View

The classical view of English spelling is that its graphemes are symbols for phonemes. For example, Bloomfield (1942) wrote: "Alphabetic writing ... directs the reader to produce certain speech-sounds" (p. 129). Fries (1963) stated: "Alphabetic writing is basically phonemic" (p. 155). He explained: "An alphabet is a set of graphic shapes that can represent

the separate vowel and consonant phonemes of the language. All alphabets are phonemically based, and the procedures of teaching the process of reading alphabetic writing must take into account this essential fact of the structural base of alphabetic writing" (p. 156). Bloomfield and Fries both considered that, although English spelling does not have a perfect one-to-one system of grapheme-phoneme relations, it nevertheless is essentially phonemic. Fries, for instance, stated that, despite irregularities in the code, English orthography remained "basically phonemic in its representation" (p. 169). Fries used the term "spelling-pattern" for the grapheme representing a phoneme. For example, the letters a plus e are a "spelling pattern" for the vowel phoneme in the printed word late. With his phonemic analysis Fries was able to describe the English spelling code clearly and simply in only ten pages. Any classroom teacher can understand it and use it as a basis for teaching children phonics.

In summary, the classical view of English spelling is that it is a code for phonemes although there are many irregular spellings. This classical description is simple and understandable to most teachers and children in their application of linguistic awareness to understanding phonic instruction. But there are failures in phonic learning and one reason may be that the classical view is not correct.

Revolutionary Views

In recent years the classical view has been challenged by two authors, Chomsky and Venezky. They deny that English spelling is a graphic code for phonemes.

Chomsky (1970) asserts that "there is little reason to expect that phoneme-grapheme correspondences will be of much interest because it appears that phonemes are artificial units having no linguistic status". Furthermore,

"the rules of sound-letter correspondence need hardly be taught" (p. 15). In other words, phonic instruction is misguided and a waste of time. Chomsky proposes that English spelling codes "lexical representation" (p. 4). He claims that his description of English orthography shows it to be "a near-optimal system for representing the spoken language".

Chomsky's assertion that English orthography is a code for "lexical representation" and not for phonemes follows logically from his general linguistic theory (Chomsky, 1957, 1965; Chomsky and Halle, 1968). The lexicon in Chomsky's grammar is a bank of lexical information about spoken words. Each lexical item is said to consist in a collection of information including the phonetic representation of its constituent sounds, and its bundles of syntactic and semantic features. More precisely, the lexical items are morphemes not words. Each morpheme in the lexicon consists in a sequence of phonological feature sets indicating its consecutive sounds. These sounds are not the classical "phonemes" of observed utterances. The phonological entries of the lexicon represent underlying "absolute" sound features of morphemes. These absolute sounds are said to change when morphemes are assembled in the context of a sentence, in accordance with phonological rules applied in a series of "cyclical transformations". In this way a "phonetic representation" is reached corresponding to the actual sounds of the sentence. Chomsky claims that there is no intermediate stage between "absolute" representation of the sounds of morphemes in the lexicon and the phonetic representation of actual spoken sounds in the final product.

Since the phoneme is rejected in Chomsky's description, it cannot be used to explain English orthography: "The reader who knows English would be best served by an orthography that leads him directly to the single-semantic unit [of the lexicon] and that eliminates all irrelevant phonetic

detail that is determined by automatic processes of the spoken language. Conventional orthography, in this as in many other cases, serves this function quite well, whereas phonetic or phonemic notation would be quite inappropriate (Chomsky, 1970, p. 13). Chomsky asserts again that it is "lexical representation that is directly related to orthography" (p. 14).

As evidence, Chomsky points out how English spellings preserve a semantic link rather than maintaining grapheme-phoneme correspondence. For example, in courage and courageous the syllable age is pronounced differently, but its consistent spelling signals the semantic link. Chomsky (1970) claims: "The reader who knows English would be best served by an orthography that leads him to the single syntactic-semantic unit courage that appears in the two phonetic forms and that eliminates all irrelevant phonetic detail ..." (p. 13). Carol Chomsky (1970) has applied Noam Chomsky's idea more directly to the reader's task. She takes as examples the spellings medicate / medicine, prodigal / prodigious, grade / gradual, quest / question, sign / resign, and comments: "By being 'unphonetic' in all of these cases, by not exhibiting grapheme-phoneme correspondence, the orthography is able to reflect significant regularities which exist at a deeper level of the sound system of the language, thus making efficient reading easier" (p. 293). She concludes: "Thus on the lexical level and in the orthography, words that are the same look the same. In phonetic transcription they look different .... The spelling system leads the reader directly to the meaning-bearing items that he needs to identify, without requiring that he abstract away from superficial and irrelevant phonetic detail" (p. 294).

Although this argument of the Chomskys may appear intuitively satisfying, it is important to pause a moment and note that they do not mention that only some English words have this feature. One can cite other

examples where semantically or morphemically related words have spellings which follow a phonemic coding rather than a lexical one, for instance beast / bestial. Also it is more common for English spellings to code both the "surface phonetic variation" and the underlying semantic relationship without conflict, for example, law / lawful, call / recall.

The Chomskys also do not discuss the historical evidence as to how these lexical or morphemic spelling conventions were introduced. The history of English orthographic changes suggests that such newer principles as morpheme representation were added to an older phonemic system. Sometimes the new and older orthographic principles worked harmoniously but sometimes they resulted in conflict. The American linguist Francis (1970) comments: "In the light of the facts about the history of English ... it would be indeed remarkable if his [Chomsky's] claims were true ..." (p. 51). The Czech linguist Vachek (1973) remarks: "Clearly as a piece of apology for present-day English spelling, the argumentation adduced by Chomsky and Halle is hardly convincing ..." (p. 68).

Francis also questions the existence of Chomsky's "lexical representation" as a psychological reality, and finds Chomsky's claims "extravagant and unsupported". He concludes that "the claim is too sweeping" (p. 51) and advises that "Chomsky's assertion must be taken with more than a grain of salt" (p. 54).

Psychologists interested in Chomsky's description of language have used the conventional scientific method of their discipline -- experimental behavioral tests of his hypotheses. For example, Simons (1975) tested two hypotheses derived from Chomsky and Halle and from Carol Chomsky: (1) "that English spelling corresponds to an underlying lexical level of representation rather than to a surface phonetic level, i.e. pronunciation"; and (2) "that

learning to read involves learning the spelling-lexical level correspondences" (p. 49). Simons tested eighty-seven second and third grade subjects on a paired-associate and reading task for two types of word pairs; morphologically related word pairs, e.g. hide / hid, and unrelated pairs, e.g. pine / pin. The words were printed on individual cards. The experimenter read the words to the subjects. Then the subject was required to read the word presented on an individual card and to respond verbally with the other member of the word pair. If Chomsky were correct, the subjects should have performed better on the morphologically related pairs than on the unrelated pairs since presumably "the organization of the internal lexicon corresponds to the way words are stored in memory" (p. 52).

Simons' results showed no significant differences between the two types of word pairs. Other studies by Moskowitz (1972), Robinson (1967), and Steinberg (1973) also have found that Chomsky's phonological rules have no psychological reality. Simons concludes that the evidence from these investigations must lead one "to question the psychological reality of lexical level of representation" (p. 58).

Chomsky's (1970) two other arguments in support of his contention that English orthography is related to lexical representation rather than to phonemes are more indirect and peripheral. One is that, "Conventional orthography is highly appropriate ... for a wide range of dialects" (p. 4). The other is that, "The level of lexical representation is highly resistant to change and persists over long historical periods .... Correspondingly one finds that conventional orthographies remain useful, with minor changes, over long periods" (p. 12). But the actual facts are contrary to Chomsky's assertions. It is well-known that children with dialects which differ noticeably from the so-called "standard English" of school have more

problems in learning to read (Downing 1973, pp. 185-192). The incidence of reading failure in areas of non-standard dialects is considerably above the normal level. There may be various reasons for this high rate of failure, but, until these have been investigated, Chomsky's assertion that English orthography is "highly appropriate ... for a wide range of dialects" must be questioned. On Chomsky's other point it is difficult to accept his judgment that English orthography has undergone only "minor changes" over the past one thousand years when one considers the historical evidence. Scragg's (1974) A History of English Spelling shows a broad range of complex changes in the orthography derived from many different causes including many consciously motivated reforms.

Another attack on the classical view that English orthography is a code for phonemes has been made by Venezky. He proposes that the language units coded by written symbols are "morphophonemic", from which phonemes are derived. Venezky used a computer program to derive and tabulate spelling-to-sound correspondences in the 20,000 most common words in English. This analysis took account of the position of written symbols and sounds in the context of words. Venezky's (1970) aim was "to discover and describe the underlying patterns of the current orthography" (p. 126). He found that two types of "functional units" at the "graphemic level" were significant for predicting how written English words are pronounced: (1) "Relational units", each of which is "a string of one or more graphemes which has a morphophonemic correspondent which cannot be predicted from the behavior of the unit's smaller graphemic components"; (2) "Markers", each of which "is a cluster of one or more graphemes whose primary function is to indicate the correspondences of relational units or to preserve a grapho-tactical or morphological pattern" (p. 50). For example, the "gn in cognac

and poignant is a single relational unit" which corresponds to a certain morphophonemic cluster, "but gn in sign and malign is not a relational unit but rather a combination of two relational units which correspond" to two separate morphophonemes. Morphophonemic rules determine whether what corresponds to g is silent or not, as in signal and malignant. Some examples of markers are: (1) final e in notice which indicates that c corresponds morphophonemically to what we usually think of as "the s sound"; (2) final e in argue to avoid final u which is never permissible in English orthography. Such markers are "dropped before a suffix which begins with a letter that will perform the same function as the e" (p. 52), e.g. noticing and arguing.

Venezky believes that he has discovered the true code of English spelling. Although he admits that, "Exceptions still remain, large numbers of them in some cases", nevertheless he believes that "the underlying pattern is so dominating that the exceptions which were once the rule become mere oddities, begging for historical justification" (p. 101). Thus Venezky claims that his morphophonemic code is more valid than the classical phonemic code because the former has fewer irregularities or exceptions. But a careful study of Venezky's "rules" reveals that he quite often employs the "rule" that a certain idiosyncratic spelling simply is the case. Therefore, most people would recognize more exceptions than Venezky admits.

Our main concern here is to provide information to help teachers consider whether Venezky's morphophonemic description would be a better basis for instruction in decoding skill than conventional phonic methods. An essential practical question is -- could teachers and students cope with Venezky's seventy or more pages of rules? Venezky takes fifteen pages to explain his rules of the graphemic system, thirty-eight pages to describe

the distributions, correspondences and alternations of consonants in written or printed English, nine pages for fricative alternations, and nineteen pages for the distributions, correspondences and alternations of vowels in written English.

Eclectic Views

Decoding involves knowing the intentions of the encoder. What did the encoder intend these graphic symbols to represent? The historical evidence shows that, for more than a thousand years, scribes, printers and teachers all behaved as if they were encoding phonemes (the term "phoneme" is of comparatively recent origin, but prior to its introduction people wrote about "sounds"). Scragg's history of English spelling shows that the most common motivation for modifying English spelling was to make it more phonemic. Writers and printers continually strove to bring the orthography back into line with pronunciation, as the latter changed. When they failed reformers urged them to return to a more phonemic code. For example, Richard Hodges' The English Primrose published in 1644 introduces his plea for a more phonemic spelling with the text "If the trumpet give an uncertain sound who shall prepare himself to the battle".

An historical survey of English spelling behavior and publications about English spelling over the past ten centuries shows that numerous other coding principles have been introduced into our orthography beside the original phonemic one. The reforms to show etymology in the Renaissance period and the seventeenth century attempts to avoid homographs for homophones are just two of the better known examples. Therefore, it is not surprising that several linguists have proposed that other types of coding overlap with the general phonemic basis in English orthography.

Lefevre (1964) states that "word-form changes, prefixes, suffixes, and other systematic clues to language structure are generally spelled quite regularly without regard to differences in sound: this regularity corresponding to important structural signals probably compensates for irregular spellings at the phonemic level" (p. 184). Lefevre's numerous examples include: (1) the regular noun plural inflection -s in cats, where the phoneme is /s/ and in dogs where the phoneme is /z/; (2) the regular verb inflection for the past tense spelled -d and pronounced /t/ in dropped, but /d/ in learned.

The Czech linguist Vachek (1973) has specialized in research on English spelling. His conclusion is that "most of the written norms do respect the correspondences between phonemes and graphemes to a degree (and some of them to a relatively high one) but alongside this basic type of correspondence one can also ascertain in these norms at least some specimens of correspondences on some higher language level ..." (pp. 21-22). These "higher" levels are the word and the morpheme. At the word level, correspondence is produced by "the operation of the logographic principle" (p. 23), e.g. the homophonous but not homographic words right, rite, wright, write. On the morphemic level, Vachek notes "the grammatical morphemes. Well-known cases of the kind are the Modern English s- endings of the plurals of nouns and of third person singular present indicative: in both grammatical categories the graphemic shape of the morpheme -(e)s is retained despite the existence of the phonemically different allomorphs /-s/, /-z/, /iz/, alternating according to well-known morphophonemic rules of Modern English" (pp. 24-25). Vachek recognizes that non-phonemic and phonemic codes exist side by side in English spelling. He concludes that "there do not exist written norms based on an exclusive correspondence on one and the same language level. It seems certain, in other words, that all written

norms constitute various kinds of compromises between the correspondences established at various levels" (p. 25).

Vachek's view is consistent with the history of English orthography. In the seventeenth century when the schoolmaster grammarians began to publish their proposals for stabilizing spelling, these non-phonemic correspondences were given explicit recognition. Vachek accepts also that shifts in written language may occur rather unconsciously as do shifts in pronunciation. For example, the tendency against two-letter words in English spelling such as doe, rye, toe, see did not effect to, of. do, no, so, be, and so on because "the early users of the English written norm unconsciously felt the difference of the non-formal and formal words ..." (p. 54). This unconscious shift in spelling may explain curious conventions like ghastly, ghost, ghetto, ghoul. Earlier English spelling always used g, not gh. The gh came in as a spelling error produced by Caxton. (He was influenced by his long experience with Dutch) He spelled "girl" as gherle, "goose" as ghoos, "goat" as ghoot, and so on. But most of the gh spellings did not become popular. Only those with connotations of fear became widely adopted. The other gh words reverted to g, as they were before Caxton's press was established.

An English linguist Albrow (1972) has concluded recently that "the English writing system ... is not one system of symbols corresponding rather superficially to sounds only (or rather to sound groupings called phonemes), but a system of systems, reflecting the phonological structure of the language, with different conventions for representing the grammatically (and lexically) different elements" (p. 10). The overlapping of these several systems produces the apparent irregularities and anomalies of English spelling.

In summary, linguists such as Albrow, Lefevre, and Vachek accept that the original basis of English spelling was a code for what are now called phonemes. But they recognize that other coding principles have developed alongside the phonemic one. The historical and phenomenological evidence seems to give greater support to these eclectic views than to the classical and revolutionary positions. English orthography was originally a code for phonemes and this phonemic principle has been consciously maintained and persists to the present day. In modern English the large majority of words are spelled phonemically and some spellings are irregularities from the phonemic rules, but a full understanding of English orthography depends on the recognition that other non-phonemic rules coexist with the phonemic ones. This eclectic description is only slightly more complex than the classical ones of Bloomfield and of Fries. The additional non-phonemic rules are few in number and readily understood by teachers and students. Furthermore, the historical development of these principles of English orthography provides a logical basis for studying its present day form. Instruction can be based on an intelligent understanding of why English words are written the way that they are.

In conclusion, the usual assumption underlying phonic instruction is substantially valid. But it is not adequate to teach only the letter-sound code. The other codes should be taught side by side. Children need to understand the morphemic and syntactical codes as well and that these codes may sometimes overrule the phonemic code.

References

Albrow, K.H. The English Writing System: Notes Towards A Description. London: Longman, 1972.

Bloomfield, L. "Linguistics and Reading". The Elementary English Review 19 (1942): 125-130, and 183-186.

Chomsky, C. "Reading, Writing, and Phonology". Harvard Educational Review 40 (1970): 287-309.

Chomsky, N. Syntactic Structures. The Hague: Mouton, 1957.

Chomsky, N. Aspects of the Theory of Syntax. The Hague: Mouton, 1965.

Chomsky, N. "Phonology and Reading". In Basic Studies on Reading, edited by H. Levin and J.P. Williams. New York: Basic Books, 1970.

Chomsky, N., and Halle, M. Sound Pattern of English. New York: Harper and Row, 1968.

Downing, J. Comparative Reading. New York: Macmillan, 1973.

Francis, W.N. "Linguistics and Reading: A Commentary on Chapters 1 to 3". In Basic Studies on Reading, edited by H. Levin and J.P. Williams. New York: Basic Books, 1970.

Fries, C.C. Linguistics and Reading. New York: Holt, Rinehart and Winston, 1963.

Lefevre, C.A. Linguistics and the Teaching of Reading. New York: McGraw-Hill, 1964.

Mattingly, I.G. "Reading, the Linguistic Process, and Linguistic Awareness". In Language by Ear and by Eye, edited by J.F. Kavanagh and I.G. Mattingly. Cambridge, Massachusetts: MIT Press, 1972.

Moskowitz, A. The Acquisition of Phonology. Doctoral dissertation, University of California, Berkeley, California, 1971.

Robinson, J. The Development of Certain Pronunciation Skills in the Case of Suffixed Words. Doctoral dissertation, Harvard University, Cambridge, Massachusetts, 1967.

Scragg, D.G. A History of English Spelling. Manchester: Manchester University Press, and New York: Barnes and Noble, 1974.

Simons, H.D. "Transformational Phonology and Reading Acquisition". Journal of Reading Behavior 7 (1975): 49-59.

Steinberg, D. "Phonology, Reading, and Chomsky and Halle's Optimal Orthography". Journal of Psycholinguistic Research 2 (1973): 239-258.

Vachek, J. Written Language. The Hague: Mouton, 1973.

Venezky, R.L. The Structure of English Orthography. The Hague: Mouton, 1970.